

**SUBJECT:** *Proposed Action Plan for the Geographic Delineation Fish Tissue and Sediment PCB Contamination, Beaver Creek in Washington County, VA*

**TO:** Bob Burnley, Director

**FROM:** Larry Lawson, Director Division of Water Program Coordination

**DATE:** February 6, 2004

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**A: Objective:**

The intent of this project is to determine the geographical extent and magnitude of the contamination of fish by polychlorinated biphenyls (PCBs) in the Beaver Creek watershed in Washington County, VA. The Virginia Department of Health (VDH) issued a PCB fish consumption advisory in a May 15, 2003 press release based on fish tissue data collected by the Virginia Department of Environmental Quality (DEQ) in 2002 from the Beaver Creek in the City of Bristol. The press release recommended eating no more than one meal per month of any fish taken from the problem area. The focus of this project is to provide the VDH additional data so that they have the necessary information to expand or contract the advisory boundaries and species included in the advisory. The study area includes the Beaver Creek upstream of the Beaver Creek Lake in Washington County, VA and downstream to the Virginia-Tennessee state line in the City of Bristol, VA. Sediment samples collected may help bracket the boundary limits of PCB contamination within the study area.

**B: Justification:**

First, the concentrations of PCBs in composite samples of edible fillets of fish tissue collected in 2002 by the DEQ exceeded the VDH level of concern of 600 parts per billion (ppb) or higher for PCBs, a specific toxic contaminant. Carp samples from the Beaver Creek site in the City of Bristol had PCB level of 1030 ppb and a largemouth bass sample had 1372 ppb.

Second, the concentrations of PCBs in all fish tissue samples taken from the City of Bristol site, assessed using EPA risk assessment techniques for PCBs as carcinogens, exceeded the Screening Value (SV) of 54 ppb. Although PCBs are only suspected carcinogens, the levels in the carp and largemouth bass tissues also exceeded the SV for non-carcinogens of 220 ppb. The SV threshold is from Table 6a of the Water Quality Assessment Guidance Manual for Y2004 305(b) Water Quality Report and 303(d) Impaired Waters List (DEQ, draft August 25, 2003).

Finally, the VDH has requested a follow up study to determine the magnitude and extent of fish contamination, and potential sources (e-mail May 13, 2003 from J. Gregory-DEQ). This suggests a potential threat to human health upon which the Director may determine the need for a source assessment.

Therefore, this project is consistent with the Department's Toxic Contamination Source Assessment Policy (January, 2000) which describes when and how to conduct source assessments for toxic contaminants using the Virginia Environmental Emergency Response Fund (VEERF). The circumstances above represent triggers listed in that document, which indicates the need for toxic contaminants source assessment.

**C: Project Structure:**

The DEQ's Central Office Fish Tissue and Sediment Monitoring Program Staff will collect fish tissue and sediment samples at selected sites within the Beaver Creek drainage in 2004. The tentative list of potential sites may be adjusted based on accessibility, river condition, weather, etc., (see Table 1 and Figure 1). The Virginia Institute of Marine Sciences (VIMS) will perform biota and sediment sample analyses once VEERF funding has been approved. Funds for additional sampling may be requested in the future, pending the 2004 sample results.

**Table 1: Potential 2004 Beaver Creek follow up sites**

DEQ site #	Stream name/location/description	Latitude	Longitude
site # 1	Beaver Creek near state line	N36° 35.706'	W82° 11.118'
site # 2	Beaver Creek near Kingtown	N36° 36.066'	W82° 10.190'
site # 3	Beaver Creek near Elm Street	N36° 36.527'	W82° 10.241'
site # 4	Beaver Creek near McChesney Dr.	N36° 36.984'	W82° 09.727'
site # 5	Beaver Creek near Goose Creek	N36° 37.919'	W82° 07.971'
site # 6	Beaver Creek near Clear Creek Rd.	N36° 38.034'	W82° 07.226'
site # 7	Beaver Creek near Beaver Creek Lake	N36° 38.380'	W82° 06.727'
site # 8	Beaver Creek near Rt. 625	N36° 39.462'	W82° 06.084'
site # 9	Beaver Creek near Rt. 804	N36° 41.935'	W82° 03.814'

**D: Safety Requirements:**

General safety requirements will be followed as stated in the DEQ's Quality Assurance/Quality Control Project Plan for the Fish Tissue and Sediment Monitoring Program (August, 1998).

**E: QA/QC for Field Sampling and Laboratory Analyses:**

The DEQ's central office staff in standards and biological programs will perform all field sampling covered by this plan. All field quality control samples will be collected in accordance with the Agency's Quality Assurance/Quality Control Project Plan For The Fish Tissue and Sediment Monitoring Program (August, 1998). Split and replicate samples will be analyzed at a frequency of 10%. All samples collected under this plan will be analyzed by VIMS.

**F: Project Scope:**

The projected study schedule follows:

January 2004 – Approval of Proposed Project Plan for VEERF funding by Agency Director.

February 2004 – Draft Project Plan incorporated into the 2004 DEQ Fish Tissue and Sediment Monitoring Plan.

Summer 2004 – Collect Fish and Sediment samples (Approximately One-Week Sampling Event)

January – February 2005 – Deliver samples to VIMS

June 2005 – Receive sample results and report to VDH

June – December 2005 – Evaluate results. Identify contaminated stations sampled in 2004. Consultation with VDH. Post data on the DEQ website. Request VEERF funding and conduct further sampling as deemed necessary and dictated by findings.

**G: Responsibility for Specific Study Plan Tasks:**

**Project Team:**

**Jean Gregory** – WQS&BP manager fish tissue and sediment collection. Facilitates communication and coordination among VDH, and DEQ Central Office and Regional Office Staff.

**Alex Barron** – WQS&BP manager fish tissue and sediment collection, data analysis, and report preparation.

**Rick Browder** – Sample collection planning and logistics, field collections, data analysis, data management, and report preparation.

**Gabriel Darkwah** – WQS&BP fish tissue and sediment lab liaison, data analysis, and data management, QA/QC, web site production, and report preparation.

**Dr. Rob Hale** – VIMS Lab Director, data QA/QC, and primary contact for samples submitted to VIMS.

**Bill Hayden** – DEQ Public Affairs Director. Central Office point of contact for web-targeted information. Central Office contact for reporters and press releases.

**H: Costs of Implementation:**

The Virginia Legislature has authorized use of the Virginia Environmental Emergency Response Fund (VEERF) for conducting the assessments described here in accordance with DEQ's Toxics Contamination Source Assessment Policy (VEERF Policy Statement 2-2001, effective 9/11/2000). Costs budgeted include sampling and analysis for samples (see Table 2).

**Total Cost for sampling February, 2004 – December, 2005: \$ 34,000.00**

- **Fish Tissue and Sediment Analysis**

WQS&BP estimates \$ 31,740.00 will be needed to analyze 50 fish tissue samples at \$510 and 12 sediment samples at \$520 including QA/QC samples in order to conduct this study as requested by VDH.

- **Incidentals**

A commitment of \$2,260.00 for equipment, lodging, meals, and miscellaneous incidental travel costs for 4 member field crew and approximately five day sampling event.

Any change in the scope of work to include special contractual services or expanded sampling will require additional resources.

**Table 2: Itemized Budget for Beaver Creek VEERF Project**

Sample Analysis: Fish Tissue Halogenated Organics, 50 samples @ \$510 each.	\$ 25,500
Sample Analysis: Sediment Halogenated Organics, 12 samples @ \$520 each.	\$ 6,240
Travel Costs: hotel, meals, equipment, and incidentals for 5 day sampling event with 4 field crew members.	\$ 2,260
Total	\$ 34,000

**I: Products:**

1. Maps with the following information
  - Monitoring locations and contaminant concentrations for fish tissue and sediments
2. Reports
  - Data to VDH
  - DEQ website and data to DEQ assessment staff
  - Plans and recommendations for further investigation

DEQ Director Approval: \_\_\_\_\_ Date: \_\_\_\_\_

Fig 1: tentative Beaver Creek 2004 PCB follow up sites

